

## ABSTRACT

An integrated underfilling process for attaching a chip/die having conductive solder bump contacts to a substrate. The process involves B-staging filled underfill on the chip/die, depositing a fluxing unfilled underfill onto the surface of the substrate, mating the chip/die with the B-staged underfill to the substrate and reflowing the assembled chip/substrate. The B-staged filled underfill reduces the coefficient of thermal expansion of the underfill fillet and the fluxing unfilled underfill removes metal oxide from the surface of the solder bump contacts and bond pads to promote the formation of reliable metallurgical joints.